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CLAIMS

[Claim(s)]

[Claim 1]Iron (Fe) group alloys, such as carbon steel, low alloy steel, austenitic stainless steel, or ferritic stainless steel, The surface of a structure which consists of said member which receives a structure in a light water reactor or neutron irradiation of a member which consists of a nickel (nickel) group alloy or a cobalt (Co) group alloy, A high-corrosion-resistance surface treatment method forming an electron discharge method alloy layer which carried out electron discharge method processing and was excellent in corrosion resistance on removal and this surface of an initial surface of said member by the inside of an oil, or underwater using an electrode which has a high-corrosion-resistance element.

[Claim 2]A high-corrosion-resistance surface treatment method being a portion which receives weld zones, such as neutron flux measurement housing, a shroud, shroud support, a top guide, and the reactor core support plate surface, a heat affected zone, or neutron irradiation as a structure in said light water reactor furnace in claim 1.

[Claim 3]In claim 1 or 2, as an electrode which has a high-corrosion-resistance element, chromium (Cr), nickel (nickel), iron (Fe), titanium (Ti), niobium (Nb), and tantalum (Ta) -- inner -- as an electron discharge method alloy layer using metal which consists of any one or two ingredients or more, or an alloy having contained them, A high-corrosion-resistance surface treatment method forming an alloy layer which contains any one or two ingredients or more among Cr, nickel, Fe, Ti, Nb, and Ta.

[Claim 4]A high-corrosion-resistance surface treatment method characterized by forming an alloy layer of the range of 5-500 micrometers in the surface of a member for processed as thickness of an electron discharge method alloy layer in either of claims 1 thru/or 3.

[Claim 5]When said member is austenitic stainless steel in claim 3, It is a range Cr and whose Ni concentration are 0.85 to 1.3 times each concentration of a base material by weight on the surface, And a high-corrosion-resistance surface treatment method containing those

compounds and 2% or less of dissolution Ti, Nb, or Ta which fixed carbon, oxygen, and a nitrogen atom in working liquid by Ti, Nb, or Ta, and forming an electron discharge method alloy layer of a 5-500-micrometer-thick range.

[Claim 6]In the case of ferritic stainless steel in which said member contains 12 to 18%, and nickel for Cr 2% or less by weight in claim 3. A range whose Cr concentration is 0.83 to 1.3 times the concentration of a base material by weight on the surface, or in addition to the Cr concentration, Ni concentration being not less than 8% of range, and, Those compounds and 2% or less of dissolution Ti, Nb, or Ta which fixed carbon, oxygen, and a nitrogen atom in working liquid by Ti, Nb, or Ta are contained, A high-corrosion-resistance surface treatment method which is a 5-500-micrometer-thick range, and is characterized by forming an electron discharge method alloy layer of nickel content a ferrite phase or gamma-phase [either].

[Claim 7]In the case of a Ni group alloy in which said member contains Cr 15 to 23%, and contains 2.5 to 37%, and Mo for Fe 16% or less by weight in claim 3. It is a range Cr and whose Ni concentration are 0.83 to 1.5 times each concentration of a base material by weight on the surface, And those compounds and 2% or less of dissolution Ti, Nb, or Ta which fixed carbon, oxygen, and a nitrogen atom in working liquid by Ti, Nb, or Ta are contained, A high-corrosion-resistance surface treatment method which is a 5-500-micrometer-thick range, and is characterized by forming an electron discharge method alloy layer of either gamma single phase or a mixed phase of gamma and gamma'.

[Claim 8]In claim 3, when said member is carbon steel or low alloy steel, Cr concentration by weight on the surface 9% - 12%, Or Cr concentration is [17% - 19%, and Ni concentration] 13% or less of ranges, And a high-corrosion-resistance surface treatment method containing those compounds and 2% or less of dissolution Ti, Nb, or Ta which fixed carbon, oxygen, and a nitrogen atom in working liquid by Ti, Nb, or Ta, and forming an electron discharge method alloy layer of a 5-500-micrometer-thick range.

[Claim 9]Iron (Fe) group alloys, such as carbon steel, low alloy steel, austenitic stainless steel, or ferritic stainless steel, The surface of a structure which consists of said member which receives a structure in a light water reactor or neutron irradiation of a member which consists of a nickel (nickel) group alloy or a cobalt (Co) group alloy, Electron discharge method processing is carried out in the inside of an oil, or underwater using an electrically-conductive-ceramics electrode, A high-corrosion-resistance surface treatment method forming in the surface an electron discharge method alloy layer which consists of an amorphous layer which consists of a constituent element and an electrode component element of said member, a fine crystalline layer, or a layer which ceramics particles distributed at the same time it removes an initial surface.

[Claim 10]A high-corrosion-resistance surface treatment method characterized by said member being a portion which receives weld zones, such as neutron flux measurement

housing which is a structure in a light water reactor furnace, a shroud, shroud support, a top guide, and the reactor core support plate surface, a heat affected zone, or neutron irradiation in claim 9.

[Claim 11]A high-corrosion-resistance surface treatment method characterized by using the sialon (Sialon) or silicon carbide (SiC) of titanium boride (TiB₂) and titanium nitride (TiN) content as an electrically-conductive-ceramics electrode in claim 9 or 10.

[Claim 12]In either of claims 1 thru/or 11, it irradiates with energies, such as a laser beam, an electron beam, or a TIG arc, after forming an electron discharge method alloy layer by electron discharge method processing, A high-corrosion-resistance surface treatment method carrying out rapid solidification and forming a remelting surface alloy layer after making some metal which is an electron discharge method alloy layer and a member for processed to be processed remelt.

[Translation done.]